



IN THE UNITED STATES OF AMERICA  
PATENT AND TRADEMARK OFFICE

**APPLICANTS:** Tianhong Cui, Jing Wang & Yongjun Zhao

**SERIAL NO.:** 10/648,927

**FILING DATE:** August 27, 2003

**TITLE:** Polymer Based Tunneling Sensor

**DOCKET NO.:** 16675/97145-00

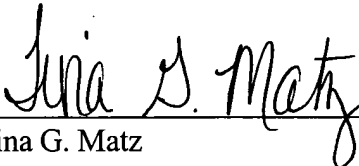
**CERTIFICATE OF MAILING**

Date of Deposit: December 8, 2003

I hereby certify that the following attached paper or fee:

- Information Disclosure Statement (6 pgs.);
- Copies of Cited Non-Patent References - 22 References;
- Certificate of Mailing; and
- Stamped, return postcard;

is being deposited with the United States Postal Service on the date indicated above and is addressed to Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

  
\_\_\_\_\_  
Tina G. Matz



**IN THE UNITED STATES OF AMERICA  
PATENT AND TRADEMARK OFFICE**

**APPLICANTS:** Tianhong Cui, Jing Wang & Yongjun Zhao

**SERIAL NO.:** 10/648,927

**FILING DATE:** August 27, 2003

**TITLE:** Polymer Based Tunneling Sensor

**DOCKET NO.:** 16675/97145-00

COMMISSIONER FOR PATENTS  
P.O. BOX 1450  
ALEXANDRIA, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

The following sections are being submitted for this Information Disclosure Statement:

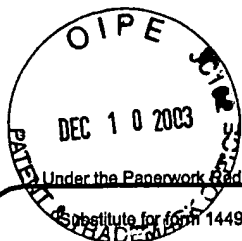
1. Preliminary Statements
2. FORM PTO -1449 (Modified)
6. Copies Of Listed Information Items Accompanying This Statement
9. Concise Explanation Of English Language Listed Information Items (Optional)
10. Identification Of Person(s) Making This Information Disclosure Statement

**Section 1. Preliminary Statements**

Applicant submits herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 CFR 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. Notice of January 9, 1992, 1135 O.G. 13-25, at 25.



PTO/SB/08a (06-03)

Approved for use through 07/31/2003. OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for Form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 4

**Complete if Known**

Application Number	10/648,927
Filing Date	August 27, 2003
First Named Inventor	Tianhong Cui, et al
Art Unit	
Examiner Name	
Attorney Docket Number	16675/97145-00

**U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US- 5,502,667	03/26/1996	Bertin, et al	
		US- 5,563,344	10/08/1996	Kaiser, et al	
		US- 5,587,128	12/24/1996	Wilding, et al	
		US- 5,726,480	03/10/1998	Pister	
		US- 5,741,156	04/21/1998	Wilson	
		US- 6,033,913	03/07/2000	Morozov, et al	
		US- 6,183,829	02/06/2001	Daecher, et al	
		US- 6,201,980	03/13/2001	Darrow, et al	
		US- 6,346,376	02/12/2002	Sigrist, et al	
		US- 6,393,913	05/28/2002	Dyck, et al	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

**FOREIGN PATENT DOCUMENTS**

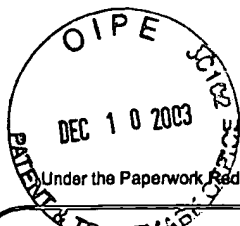
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



PTO/SB/08b (06-03)

Approved for use through 06/30/2003. OMB 0851-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute Form 1449B/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet

2

of

4

**Complete if Known**

Application Number

10/648,927

Filing Date

August 27, 2003

First Named Inventor

Tianhong Cui, et al

Art Unit

Examiner Name

Attorney Docket Number

16675/97145-00

**NON PATENT LITERATURE DOCUMENTS**

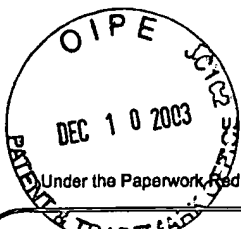
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	✓	ROOS, N., LUXBACHER, T., GILSNER, T., PFEIFFER, K., SCHULZ, H. & SCHEER, H.-C.; Nanoimprint Lithography with a Commercial 4 Inch Bond System for Hot Embossing, Presented at SPIE'S Microlithography, 27-28 February 2001, Santa Clara, CA	
	✓	HEYDERMAN, L.J., SCHIFT, H., DAVID, C., KETTERER, B., AUF DER MAUR, M. & GOBRECHT, J.; Nanofabrication Using Hot Embossing Lithography and Electroforming; Microelectronic Engineering 57-58 (2001), pgs. 375-380	
	✓	SCHEER, H.-C., SCHULTZ, H. & LYEBYEDYEV; Strategies for Wafer-Scale Hot Embossing Lithography; Proc. SPIE 4349, (2001) pg. 86	
	✓	LEE, G., CHEN, S., HUANG, G., SUNG, W. & LIN, Y.; Microfabricated Plastic Chips by Hot Embossing Methods and Their Applications for DNA Separation and Detection; Sensors and Actuators B 75 (2001), pgs. 142-148	
	✓	BECKER, H. & DIETZ, W.; Microfluidic Devices for u-TAS Applications Fabricated by Polymer Hot Embossing; SPIE Vol. 3515; Santa Clara, CA; September 1998; pgs. 177-181	
	✓	BECKER, H. & HEIM, U.; Hot Embossing as a Method for the Fabrication of Polymer High Aspect Ratio Structures; Sensors and Actuators 83 (2000) pgs. 130-135	
	✓	BECKER, H. & HEIM, U; Silicon as Tool Material for Polymer Hot Embossing; Proceedings MEMS 99; 1999; pgs. 228-231	
	✓	MULLER, K.-D., BACHER, W. & HECKELE, M.; 3D Diced Microcomponents Fabricated by Multi-Layer Hot Embossing; MME, 1999; Micro-Mechanics Europe, Gif-sur-Yvette, F, September 27-28, 1999	
	✓	ROETTING, O., KOHLER, B., REUTHER, F., BLUM, H. & BACHER, W.; Production of Movable Metallic Microstructure by Aligned Hot Embossing and Reactive Ion Etching; Proceedings of SPIE - The International Society for Optical Engineering, Vol. 3680; pgs. 1038-1045	
	✓	LIN, L., CHIU, C., BACHER, W. & HECKELE, M.; Microfabrication Using Silicon Mold Inserts and Hot Embossing; Proceedings of the International Symposium on Micro-Machine and Human Science; 1996; pgs. 67-71	

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for Form 1449B/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet

3

of

4

### Complete if Known

Application Number

10/648,927

Filing Date

August 27, 2003

First Named Inventor

Tianhong Cui, et al

Art Unit

Examiner Name

Attorney Docket Number

16675/97145-00

### NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	/	BASKI, A., ALBRECHT, T. & QUATE, C.; Tunnelling Accelerometer; Journal of Micro-Scopy, 152; pgs. 73-76, 1988	
	/	WALTMAN, S. & KAISER, W.; An Electron Tunneling Sensor; Sensors Actuators, Vol. 19; pgs. 201-210, 1989	
	/	KENNY, T., WALTMAN, S. REYNOLDS, J. & KAISER, W.; Micromachined Silicon Tunnel Sensor for Motion Detection; Appl. Phys. Lett., Vol. 58; pgs. 100-102; 1991	
	/	TANG, W., NGUYEN, T. & HOWE, R.; Laterally Driven Polysilicon Resonant Microstructures; IEEE, February 20-22, 1989, pgs. 53-59	
	/	JOHNSON, W. & WARNE, L.; Electrophysics of Micromechanical Comb Actuators; Journal of Microelectromechanical Systems, Vol. 4, 1995, pgs. 49-59	
	/	YE, W. & MUKHERJEE, S.; Optimal Shape Design of Three-Dimensional MEMS with Applications to Electrostatic Comb Drives; Cornell University, Ithaca, NY; pgs. 580-585	
	/	YE, W., MUKHERJEE, S. & MACDONALD, N.; Optimal Shape Design of an Electrostatic Comb Drive in Microelectromechanical Systems; Journal of Microelectromechanical Systems, Vol. 7; 1998; pgs. 16-26	
	/	RODGERS, M., KOTA, S., HETRICK, J., LI, Z., JENSEN, B., KRYGOWSKI, T., MILLER, S., BARNES, S. & BURG, M.; A New Class of High Force, Low-Voltage, Compliant Actuation Systems; www.mems.sandi.gov; Albuquerque, NM	
	/	YEH, J., HUI, C. & TIEN, N.; Electrostatic Model for an Asymmetric Combedrive; Journal of Microelectromechanical Systems, Vol. 9; 2000; pgs. 126-135	
	/	CHAN, E. & DUTTON, R.; Electrostatic Micromechanical Actuator with Extended Range of Travel; Journal of Microelectromechanical Systems, Vol. 9, 2000; pgs. 321-328	

Examiner  
Signature

Date  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DEC 10 2003

PTO/SB/08b (06-03)

Approved for use through 06/30/2003. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for H. R. 1498/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

**(Use as many sheets as necessary)**

Sheet

4

of

4

Attorney Docket Number

**Complete if Known**

**Application Number**

10/648.927

Filing Date

August 27, 2003

***First Named Inventor***

Tianhong Cui, et al

**Art Unit**

**Examiner Name**

16675/97145-00

## NON PATENT LITERATURE DOCUMENTS

[illegible]

**Examiner  
Signature**

Date  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

***If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.***

**Section 6. Copies of Listed Information Items Accompanying This Statement**

Copies of cited references listed are attached.

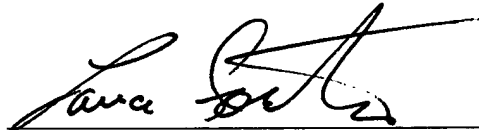
**Section 9. Concise Explanation Of English Language Listed Information Items (Optional)**

**Section 10. Identification of Person(s) Making THIS INFORMATION DISCLOSURE STATEMENT**

The person making this statement is the attorney who signs below on the basis of the information in the attorney's file.

Reg. No.: 38,882

Tel. No.: (225) 248-2106

A handwritten signature in black ink, appearing to read "Lance Foster", is written over a horizontal line.

LANCE A. FOSTER

JONES, WALKER, WAECHTER, POITEVENT,  
CARRÈRE & DENÈGRE, L.L.P.

4<sup>TH</sup> FLOOR, FOUR UNITED PLAZA  
8555 UNITED PLAZA BOULEVARD  
BATON ROUGE, LOUISIANA 70809